IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.(Currently Amended) Ultrasonic image processing system, for processing images in an image sequence representing a segment of artery explored along its longitudinal axis, said artery segment showing moving walls; this system comprising:

semi-automatic detection means for detecting the artery walls in an image of the sequence;

automatic rigid tracking means for tracking the corresponding artery walls in other images of the sequence;

evaluation means for evaluating the artery wall motion and distensibility; and

viewing means for visualizing the images together with together with parameters that include the distensibility being a ratio of dilation by a diameter of the artery.

2.(Currently Amended)   The system of Claim 1, wherein the semi-automatic detection means is a user assisted artery wall detection means comprising user interaction means for:

selecting a reference image as a starting image among the images of the sequence;

drawing lines, called paths, representing the artery walls in the starting image, assisted by a path search technique based on the minimization of a cost function.

3.(Currently Amended)   The system of Claim 2, wherein the user interaction means for drawing a path representing a wall comprises means for:

selecting a starting pixel in the starting image for creating a new path structure;

drawing a portion of the path between the starting pixel and a second selected pixel in the starting image;

evaluating the cost function of the portion of the path as the a sum of the cost of the individual pixels that constitute the path;

selecting ~~the~~ an optimal path as the path that minimizes the cost function;

memorizing the optimal path;

drawing portions of path between successive pixels; and

performing the operations of evaluating ~~the~~ respective cost functions, selecting ~~the~~ optimal paths and memorizing the optimal paths until a complete path is drawn for the artery wall.

4. (Currently Amended) The system of Claim 3, having means for estimating the cost of the individual pixels based on ~~the~~ a gradient at ~~the~~ a pixel in the ~~ultrasonic~~ image.

5. (Currently Amended) The system of one of claim 3, wherein the automatic rigid tracking means for tracking the corresponding artery walls in other images of the sequence comprises means of path finding including means for:

defining regions of interest (ROIP, ROID) around the paths drawn in the starting image and using the same regions of interest in the other images of the sequence;

selecting a current image next to the starting image;

initializing the tracking of the paths in the current image by using ~~the~~ positions of the paths in the starting image;

applying translations to ~~said~~ initial paths in the current image to fit the walls in the current image;

evaluating the cost of the paths in the current image using the same cost function as in the starting image and finding the translations that minimizes the cost function;

iterating ~~these path finding steps~~ until ~~the~~ a beginning and ~~the~~ an end of the sequence are reached.

6. (Currently Amended) The system of Claim 5, wherein means for evaluating the cost performs cost evaluation of the individual pixels based on ~~the~~ a gradient at the pixel in the ultrasonic images calculated for all the images of the sequence, considered as a two-dimensional ~~plus-time volume~~ images corresponding to a volume over a period of time.

7. (Currently Amended) The system of claim 1, _further_ comprising computation means for calculating ~~the~~ dilation of the artery along ~~the~~ ultrasound beams in the images of the sequence

using ~~the~~ segmentation of the walls performed by path finding with

semi-automatic detection and rigid tracking.

Claim 8 (Canceled)

9. (Currently Amended)   ~~A~~ The system as claimed in claim 1,

~~having~~ further comprising color display means to display colored

paths for the artery walls and colored patterns for ~~the wall~~

~~dilation~~ dilation of the artery walls, superimposed on the

ultrasonic images.

10. (Currently Amended)   ~~A~~ The system as claimed in claim 1,

further comprising a suitably programmed computer of a workstation

or a special purpose processor having circuit means, which are

arranged to process ~~ultrasonic~~ the images, having means to display

the processed images, and having a user interface ~~such as a mouse~~

~~or a keyboard~~ to permit ~~the~~ a user of interacting on the respective

images of the sequence in order to display ~~the~~ quantified

parameters related to the artery walls.

11. (Currently Amended) A computer readable storage medium comprising a computer program product comprising a set of instructions to be used in a system as claimed in claim 1.

12. (Currently Amended) ~~A~~ The system as claimed in claim 1, ~~wherein the transducer array is~~ further comprising a curved transducer array.

13. (Currently Amended) An ultrasonic medical image processing method comprising ~~steps of~~ acts of:

acquiring a sequence of ultrasound images, using an array of transducer elements, ~~and steps for~~

detecting anomalies in arteries ~~comprising~~, wherein the detecting act comprises the acts of:

semi-automatic ~~detection of~~ detecting the artery walls in a reference image of the sequence;

automatic rigid tracking of the corresponding artery walls in other images of the sequence;

~~evaluation of~~ evaluating the artery wall motion and distensibility; and

~~visualization of~~ visualizing the ultrasound images together

~~with~~ together with parameters that include the distensibility being

a ratio of dilation by a diameter of the artery.

14. (Currently Amended)   An ultrasound examination apparatus

having means to ~~acquired~~ acquire ultrasound images and coupled to

an image processing system according to claim 1.

15. (New)   An image processing system for processing images in

a sequence representing a segment of artery explored along its

longitudinal axis, said segment showing moving walls; the system

comprising a processor configured to:

track artery walls detected in an image of the sequence in

other images of the sequence;

evaluate artery wall motion and distensibility for display of

the images together with parameters that include the distensibility

being a ratio of dilation by a diameter of the artery.

16. (New)   The image processing system of claim 15, wherein the

artery walls are detected through user interaction.

17.(New)   The image processing system of claim 15, wherein the artery walls are detected through user interaction combined with live-wire detection including:

selecting a reference image as a starting image among the images of the sequence; and

drawing paths representing the artery walls in the starting image, assisted by a path search technique based on the minimization of a cost function.